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Reference Integration Note For

Marvell Avastar 88W8797

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Abstract: This document provides a conceptual description of *Marvell Avastar 88W8797*, FW version 14.x.x.px and summarizes the integration requirements as a guide for others integrating this design.

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Document Revision History		
Revision	Date	Description
1.0		Initial draft

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1 PREFACE

The 88W8797 includes an integrated Bluetooth 4.0 + HS (supports Low Energy (LE)) baseband/radio. It supports Bluetooth Class 1 and Class 2 applications. The 88W8797 Bluetooth firmware is fully compliant to the Bluetooth 4.0 + HS specification up the Host to Controller Interface (HCI) layer. It supports all Bluetooth low power operation modes, and all mandatory and key optional features of the Bluetooth 4.0 + HS.

This document forms the Reference Integration Note for;

Design RIN Information	
Product Name:	88W8797
Bluetooth Qualified	B017846
Design ID (QD ID):	
Bluetooth Product Type:	Component Product (tested)
Product Name:	88W8797
Hardware Version:	88W8797
Software Version:	14.x.x.px

2 PRODUCT OVERVIEW

The Marvell® Avastar™ 88W8797 is a highly integrated 2x2 wireless local area network (WLAN) System-on-Chip (SoC), specifically designed to support high throughput data rates for next generation products and is part of the Marvell Avastar family of wireless devices. The SoC is designed for both simultaneous and independent operation of the following:

- 2x2 MIMO spatial streams supporting data rates up to MCS15 (300 Mbps)
- IEEE 802.11n/a/g/b payload data rates for Wireless Local Area Network (WLAN)
- Bluetooth 4.0 + HS (supports Low Energy (LE))
- FM transmit and receive (digital encoder/decoder FM radio with RDS/RBDS)

The device supports the 802.11i security standard through implementation of the Advanced Encryption Standard (AES)/Counter Mode CBC-MAC Protocol (CCMP), Wired Equivalent Privacy (WEP) with Temporal Key Integrity Protocol (TKIP), Advanced Encryption Standard (AES)/Cipher-Based Message Authentication Code (CMAC), and WLAN Authentication and Privacy Infrastructure (WAPI) security mechanisms. The device also supports 802.11n Beamformer and Beamformee functions.

For video, voice, and multimedia applications, 802.11e Quality of Service (QoS) is supported. The device also supports 802.11h Dynamic Frequency Selection (DFS) for detecting radar pulses when operating in the 5 GHz range. The 88W8797 supports generic interfaces including SDIO 3.0, High-Speed Inter-Chip (HSIC), USB 2.0, high-speed UART, and PCM for connecting WLAN, Bluetooth, and FM to the host processor. For FM Tx/Rx, the device supports Inter-IC Sound (I2S) / analog stereo audio interfaces. An I2C-compatible interface is available to connect FM Tx/Rx to the host processor, as well. FM Tx/Rx can also share the host interface with Bluetooth.

The device is also equipped with a coexistence interface for external, co-located 2.4 GHz radios. Available packaging includes a TFBGA option.

2.1 HARDWARE FEATURES

2.1.1 Product Type Declaration

88W8797 is listed as *Bluetooth Component Product (tested)*. If you use this product to implement Bluetooth in your product's design further qualification and listing is required in

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accordance with the Bluetooth Qualification Process. To start the process for a new qualification, please visit <https://bluetooth.org/TPG/>.

2.1.2 Hardware Overview

The Marvell® Avastar™ 88W8797 is a highly integrated 2x2 wireless local area network (WLAN) System-on-Chip (SoC), specifically designed to support high throughput data rates for next generation products and is part of the Marvell Avastar family of wireless devices. The SoC is designed for both simultaneous and independent operation of the following:

- 2x2 MIMO spatial streams supporting data rates up to MCS15 (300 Mbps)
- IEEE 802.11n/a/g/b payload data rates for Wireless Local Area Network (WLAN)
- Bluetooth 4.0 + HS (supports Low Energy (LE))
- FM transmit and receive (digital encoder/decoder FM radio with RDS/RBDS)

2.1.3 Standard Operating Conditions

Type of Power Source:	DC
Voltage Supply:	1.8V +/- 5%
Operating Temperature:	0C to 70C
Storage Temperature:	22C
Antenna gain:	0 dB

2.1.4 Application

- WLAN/Bluetooth/FM enabled cellular handsets
- Portable audio/video devices and accessories
- Personal computing systems including pads, tablets, and slates
- Wireless home audio and video entertainment systems including TV, set-top boxes, media servers, and gaming platforms

2.1.5 Block Diagram

Below is the block diagram of common hardware implementation of 88W8797. Please refer to schematic files in qualification compliance folder for implementation details.



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- 88W8797 has integrated radio modules for Bluetooth and WLAN operation at 2.4 GHz and WLAN at 5 GHz. The integrated Bluetooth radio can operate at class 2 and class 1 with no need of an external power amplifier.

- SDIO 3.0 device interface (SPI, 1-bit SDIO, 4-bit SDIO transfer modes at full clock range up to 100 MHz)¹
- High-Speed Inter-Chip (HSIC) with Link Power Management (LPM) support
- USB 2.0 interface with LPM support
- High speed UART interface
- Optional I2C-compatible slave interface for FM control

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2.1.9 Application Requirements

88W8797 communicates with Bluetooth host through UART/SDIO interface using HCI commands as defined in Bluetooth specification. Please refer to 'USER MANUAL' for supported Bluetooth features and commands. It also needs corresponding host driver to be installed to support corresponding interface. Please contact Marvell Semiconductor, Inc. for updates.

2.1.10 PIN Description

Please refer to 88W8797 Reference Design document in compliant folder

2.1.11 Bill of Material

Please refer to BOM file in qualification compliance folder.

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